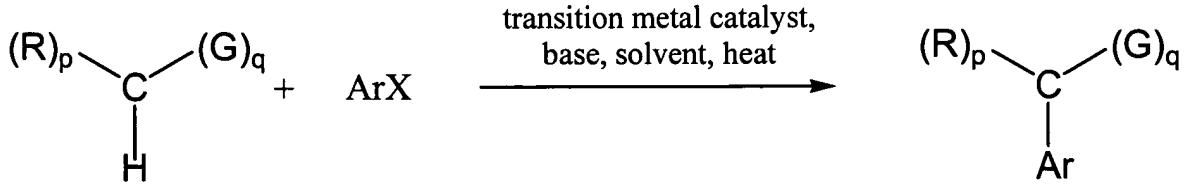
Claims

1. **(currently amended)** A method represented by Scheme 1:



1 **2**

Scheme 1

wherein

G represents, independently for each occurrence, an electron withdrawing group selected from the group consisting of formyl, acyl, -C(O)OR, -C(O)NR_2, nitro, nitroso, -$S(O)_2R$, -SO_3R, -$S(O)_2NR_2$, -C(NR)-R, -C(NOR)-R, and -$C(NNR_2)$-R;

R represents, independently for each occurrence, hydrogen, alkyl, aryl, heteroalkyl, heteroaryl, halogen, alkylamino, arylamino, alkylthio, arylthio, alkoxy, aryloxy, or -$(CH_2)_m$-R_8;

Ar represents an aromatic or heteroaromatic moiety;

X represents halogen, -OTf, -ONf, -OTs, -OMs, (alkyl)$S(O)_2O$-, or (aryl)$S(O)_2O$-;

the transition metal catalyst consists essentially of ~~a Group VIIIA metal~~ palladium and one to four inclusive ~~non-chelating~~ monodentate ligands selected from the group consisting of OAc, Cl, CH_3CN, triphenylphosphine, tri(o-tolyl)phosphine, trimethylphosphine, triethylphosphine, tripropylphosphine, triisopropylphosphine, tributylphosphine, tricyclohexylphosphine, trimethyl phosphite, triethyl phosphite, tripropyl phosphite, triisopropyl phosphite, tributyl phosphite and tricyclohexyl phosphite;

base represents a Bronsted base;

R_8 represents independently for each occurrence a substituted or unsubstituted aryl, cycloalkyl, cycloalkenyl, heterocycle or polycycle;

m, independently for each occurrence, is an integer selected from the range 0 to 8 inclusive;

q is an integer selected from the range 1 to 3 inclusive; and

p is an integer equal to (3-q).

Claim 2 **(canceled)**

3. **(currently amended)** The method of claim 1, wherein said at least one ~~non-chelating~~ monodentate ligand is an asymmetric ligand; and the reaction produces a non-racemic mixture of a chiral compound **2**.

Claims 4-7 **(canceled)**

8. **(original)** The method of claim 1, wherein R represents, independently for each occurrence, hydrogen, alkyl, aryl, heteroalkyl, heteroaryl, or $-(CH_2)_m-R_8$.

9. **(original)** The method of claim 1, wherein X represents Br, I, -OTf, -ONf, -OTs, or -OMs.

10. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein X represents Br, I, -OTf, or -ONf.

11. **(original)** The method of claim 10, wherein the base is an alkoxide, carbonate, or an amide.

12. **(original)** The method of claim 11, wherein the base is a salt of tert-butoxide, dialkylamide, or bis(trialkylsilyl)amide.

13. **(original)** The method of claim 12, wherein the base is lithium, sodium, or potassium tert-butoxide.

14. **(original)** The method of claim 13, wherein the base is sodium tert-butoxide.

15. **(original)** The method of claim 10, wherein the solvent is a non-polar, aprotic solvent.

16. **(original)** The method of claim 14, wherein the solvent is a non-polar, aprotic solvent.

17. **(original)** The method of claim 15, wherein the solvent is a hydrocarbon.

18. **(original)** The method of claim 16, wherein the solvent is a hydrocarbon.

19. **(original)** The method of claim 17, wherein the solvent is an aromatic hydrocarbon.

20. **(original)** The method of claim 18, wherein the solvent is an aromatic hydrocarbon.

21. **(original)** The method of claim 19, wherein the solvent is toluene.

22. **(original)** The method of claim 20, wherein the solvent is toluene.

23. **(original)** The method of claim 1, wherein q equals 1.

24. **(original)** The method of claim 22, wherein q equals 1.

25. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein G represents, independently for each occurrence, acyl, formyl, -C(O)OR, -C(O)NR_2, -$S(O)_2R$, -SO_3R, -$S(O)_2NR_2$, -C(NR)-R, -C(NOR)-R, or -C(NNR_2)-R.

26. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein G represents, independently for each occurrence, acyl, -C(O)OR, -C(NR)-R, -C(NOR)-R, or -C(NNR_2)-R.

27. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein G represents acyl.

28. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein the method is practiced between about 70 and 110 °C.

29. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein the method is practiced at about 100 °C.

30. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein the method is practiced at about 70 °C.

31. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein the method is practiced at about 25 °C.

32. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein the product has an ee of greater than or equal to 50%.

33. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein the product has an ee of greater than or equal to 70%.

34. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein the product has an ee of greater than or equal to 80%.

35. **(currently amended)** The method of claim 1, 3, ~~4, 5,~~ 8, or 9, wherein the product has an ee of greater than or equal to 90%.

Claims 36-70 **(canceled)**